**WATER QUALITY SWALE**

**SWALE AREA**

**FREEBOARD AREA**

**TREATMENT AREA 6’ MINIMUM WIDTH**

**FREEBOARD AREA**

**BUFFER/MITIGATION AREA**

<table>
<thead>
<tr>
<th>EC MATTING</th>
<th>ECONOJUTE*</th>
<th>COCONUT FIBER OR GEOJUTE PLUS*</th>
<th>ECONOJUTE*</th>
<th>ECONOJUTE* (S&gt; 20%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEED MIX</td>
<td>LOW GROW MIX</td>
<td>NONE</td>
<td>LOW GROW MIX</td>
<td>AS APPROVED BY</td>
</tr>
<tr>
<td>MAX. SLOPE</td>
<td>2.5:1</td>
<td>4:1</td>
<td>FLAT BOTTOM</td>
<td>DISTRICT OR CITY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4:1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.5:1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

* OR AS APPROVED

**NOTES:**

1. REFER TO APPENDIX A, CWS DESIGN & CONSTRUCTION STANDARDS, FOR LANDSCAPING REQUIREMENTS INCLUDING TREE PLACEMENT, TOPSOIL AND PLANTING SPECIFICATIONS.
2. PROVIDE IRRIGATION AS APPROVED BY CWS.
3. JUTE MATING– GEOJUTE PLUS IN TREATMENT AREA, ECONOJUTE FOR ALL OTHER AREAS, OR SIMILAR FABRICS. COCONUT FIBER IS ALSO ACCEPTABLE.
4. 12-INCHES OF TOPSOIL SHALL BE PLACED THROUGHOUT THE WATER QUALITY TRACT.
5. FREEBOARD AREA SEED MIX, DWARF TALL FESCUE 40%, DWARF PERENIAL RYE 30%, CREEPING RED FESCUE 25%, COLONIAL BENT GRASS 5%. APPLY AT A RATE OF 120# / ACRE.
CONSTRUCTION

1. Water Quality Swale shall be over-excavated and filled to final grade with 12-inch amended topsoil. Topsoil amendments shall be garden compost, not conventional fertilizer amendments.

2. A biodegradable Erosion Control Matting shall be placed over the topsoil throughout the swale cross section, fabric shall be held in place in accordance with the manufacturer's installation requirements. Anchor spacing shall be based on 3 fps flow over the fabric.
   a. Treatment area - high-density jute matting (Geojute Plus or other approved equal)
   b. All other areas - low-density jute matting (Econojute or other approved equal)

3. 2.5-3 inches of 2"-3" river run rock shall be placed over the matting evenly throughout the length and width of the swale.

4. Plant materials shall be placed in accordance with the plan and plant table as shown on approved plans.

5. The water quality swale treatment area plantings can be deemed "substantially complete" once active green growth has occurred to an average growth of 3" and plant density is an average of approx. 6 plants (minimum 1-inch plugs or equivalent) per square foot.

6. The facility shall be deemed acceptable to begin the maintenance period when plant growth and density matches the engineer's design as shown on the approved plans and all other requirements have been met. The engineer must certify the facility to be functional, in accordance with the approved plan design to begin the two-year maintenance period.

MAINTENANCE

1. The permittee is responsible for the maintenance of this facility for a minimum of two years following construction and acceptance of this facility per Chapter 2.

2. Irrigation is to be provided per separate irrigation plan as approved.
   Note: Irrigation needs are to be met using a temporary irrigation system with a timer during the dry season. Systems should be winterized during the wet season to assure longevity and guard against damage from freezing temperatures. Water source shall be as shown on the approved plans.

3. Engineer or Owners Representative is to visit and evaluate the site a minimum of twice annually (Spring and Fall). The landscaping shall be evaluated and replanted as necessary to ensure a minimum of 80% survival rate of the required vegetation and 90% aerial coverage. Non-native, invasive plant species shall be removed when occupying more than 20% of the site.

4. The facility shall be re-excavated and planted if siltation greater than 3 inches in depth occurs within the two-year maintenance period.
NOTES:
1. CONNECTING PIPE AND TEE SHALL BE 4", 6", OR 8" AWWA C-900 OR ASTM 3034 PVC, AND ONE SIZE LARGER THAN THE ORIFICE OPENING.
2. MAXIMUM ORIFICE OPENING SHALL BE 6" DIAMETER.
3. STRUCTURES SHALL CONFORM TO STANDARD DRAWING NO. 390 DITCH INLET.
4. FRAME AND GRATE SHALL CONFORM TO STANDARD DRAWING NO. 400, DITCH INLET FRAME AND GRATE.
5. PLATE AND GUIDE SHALL BE SECURED FLUSH AGAINST WALL OF STRUCTURE AS APPROVED.
6. MAINTENANCE ACCESS REQUIRED TO WITHIN 10' OF CENTER OF BOTH STRUCTURES.
7. FOR APPROVAL OF ALTERNATE STRUCTURES SEE SECTION 1.17.

OUTFLOW CONTROL STRUCTURE

DRAWING NO. 720

CleanWater Services

REVISED 11-06
SLOT SHALL BE 1"x5" CENTERED

1 1/2" MIN.

2" MIN.

2" MIN.

3"

3 1/2"

6" (TYP.)

10" MINIMUM

12" MIN.

TOP OF GUIDE
± 3" BELOW GRATE

SPACER REQUIRED FOR
MULTIPLE ORIFICES

ORIFICE SIZE
ORIFICE ELEVATION

ALIGN INVERT OF ORIFICE TO
INVERT OF PIPE.

3/8" STAINLESS STEEL CHAIN OR CABLE
ATTACHED TO ORIFICE PLATE AND
STRUCTURE AS APPROVED. CHAIN OR CABLE
SHALL BE SMALL ENOUGH TO ALLOW ORIFICE
PLATE TO BE REMOVED FROM GUIDE. ORIFICE
PLATE AND GUIDE TO BE MANUFACTURED
FROM 3/8" HDPE OR 3/8" STAINLESS STEEL

1/2" SELF-TAPPING CONCRETE
ANCHORS, PHILLIPS 5-12 OR
APPROVED EQUAL
1/2" X 1-1/2" STAINLESS STEEL
BOLT.

NOTE:
FOR MULTIPLE ORIFICE APPLICATION
A 3" MIN. SPACER IS REQUIRED AS
SHOWN. SPACER TO MATCH PLATE GUIDE
DIMENSIONS, WIDTH, MATERIAL
WITH A WATER TIGHT SEAL.

ORIFICE PLATE GUIDE SHALL FIT STOP
GATE AND INCLUDE BOTTOM CHANNEL
ORIFICE PLATE GUIDE.

DRAWING NO. 730
REVISED 12-06
NOTES:
1. ALL FITTINGS, FASTENERS, & AND FABRIC TIES SHALL BE HOT DIP GALV.
2. CONC SHALL BE MIN 2500 PSI & 28 DAYS.
3. PROVIDE BRACE RAIL BETWEEN END POSTS AND LINE POSTS. LENGTHS AS
REQU.
4. PROVIDE GATE STOPS AND DROP RECEIVERS SET IN CONCRETE, EACH
GATE.
5. PROVIDE EXTENSION ARMS ON LINE, END AND CORNER POSTS & GATE
POSTS AS REQU.
6. PROVIDE SIGHT OBSCURING SLATS WITH ALL WASTEWATER PUMP
STATIONS.
7. CENTER BRACE RAIL NOT REQUIRED WITH FENCE HEIGHT OF 5' OR LESS.
8. ALL POSTS AND RAILS TO MATCH FENCE COLOR.
STEEL PIPE SPECIFICATIONS
ASTM A-53 STEEL, SCHEDULE 40,
BLACK, HOT DIPPED, ZINC-COATED, WELDED, SEAMLESS
4-INCH STEEL PIPE O.D. = 4.500" I.D. = 4.026" THICKNESS = 0.237
3 1/2-INCH STEEL PIPE O.D. = 4.000" I.D. = 3.549" THICKNESS = 0.226"

3 1/2" STEEL PIPE BOLLARD CAPPED AT TOP
PRIME AND PAINT SAFETY YELLOW.

4" ROUND X 2" LONG STEEL COLLAR, WELDED TO BOLLARD.

WELD 2" ANGLE IRON TO CASING
AND COLLAR DRILL 1/2" HOLES FOR PADLOCK

FINISH GRADE

4" STEEL PIPE CASING

POUR CONCREATE 6" THICK AROUND PIPE CASING.

GRAVEL BASE, 12" MINIMUM

REMovable BOLLARD

CleanWater Services

DRAWING NO. 760
REVISED 12-06
RIPRAP:

- ROCK FOR RIPRAP SHALL BE ANGULAR IN SHAPE.
- THICKNESS OF A SINGLE ROCK SHALL NOT BE LESS THAN ONE-THIRD ITS LENGTH.
- ROUNDED ROCK WILL NOT BE ACCEPTED UNLESS APPROVED BY THE DISTRICT.

RIPRAP INSTALLATION:

- EXCAVATE BELOW FINISH GRADE TO DEPTH & DIMENSIONS SHOWN ON APPROVED PLANS.
- INSTALL WOVEN GEOTEXTILE FABRIC.
- PLACE RIP RAP TO FINISH GRADE.

GRADE RIPRAP SHALL BE THE CLASS AND SIZE OF ROCK ACCORDING TO THE FOLLOWING:

<table>
<thead>
<tr>
<th>CLASS</th>
<th>CLASS</th>
<th>CLASS</th>
<th>CLASS</th>
<th>CLASS</th>
<th>PERCENT (BY WEIGHT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>100</td>
<td>200</td>
<td>700</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>50-30</td>
<td>100-60</td>
<td>200-140</td>
<td>700-500</td>
<td>2000-1400</td>
<td>20</td>
</tr>
<tr>
<td>30-15</td>
<td>60-25</td>
<td>140-80</td>
<td>500-200</td>
<td>1400-700</td>
<td>30</td>
</tr>
<tr>
<td>15-2</td>
<td>25-2</td>
<td>80-8</td>
<td>200-20</td>
<td>700-40</td>
<td>40</td>
</tr>
<tr>
<td>2-0</td>
<td>2-0</td>
<td>8-0</td>
<td>20-0</td>
<td>40-0</td>
<td>10</td>
</tr>
</tbody>
</table>
1" ABOVE FINISHED GRADE

3" WATERING BERM

MULCH NO CLOSER THAN 1" FROM TRUNK

3"-4" COMPOSTED MULCH

REMOVE TWINE FROM AROUND BASE OF THE TREE, PUSH BURLAP AND ROPE FLAT AGAINST GROUND (TREATED OR SYNTHETIC BURLAP MUST BE REMOVED)

ROOTBALL

3 x DIA OF ROOTBALL

LOosen AND MIX ORIGINAL SOIL WITH SHOVEL

NOTE: IF TREE IS CONTAINER GROWN STOCK, BREAK ROOT BALL APART BEFORE PLACING IN PLANTING HOLE. IF PLANT IS ROOT BOUND MAKE A VERTICAL CUT THROUGH THE LOWER 1/4 OF THE SOIL MASS, PULL OUT AND STRAIGHTEN LARGE, CIRCLING ROOTS.

TREE PLANTING—CONTAINER/BURLAPPED

DRAWING NO. 780

REvised 01-07
12"x18" signs shall be placed in a manner as to clearly identify the sensitive area and vegetated corridor as well as at all points of entry such as the beginning of paths, trail heads, and any place that the public may want or be able to enter area.

4"x4" signs shall be used for areas where a large number of signs are needed such as the back or side yards on each lot adjacent to the sensitive area or vegetated corridor in new subdivisions of partitions.